

What is claimed is:

1. An isolated protein having an amino acid sequence comprising a sequence selected from the group consisting of SEQ ID NOs: 1-69 and 139-181.
2. The isolated protein of claim 1, wherein said protein is an antigen-binding protein.
3. The isolated protein of claim 2, wherein said antigen is human Rh(D) protein.
4. The isolated protein of claim 3, wherein said protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 1-69 and 139-181.
5. The isolated protein of claim 3, wherein said antigen-binding protein is an antibody.
6. The isolated protein of claim 5, wherein said antibody comprises a heavy chain having an amino acid sequence selected from the group consisting of SEQ ID NOs: 1-28 and 139-153.
7. The isolated protein of claim 5, wherein said antibody comprises a light chain having an amino acid sequence selected from the group consisting of SEQ ID NOs: 29-69 and 154-181.
8. The isolated protein of claim 5, wherein said antibody comprises a heavy chain having an amino acid sequence selected from the group consisting of SEQ ID NOs: 1-28 and 139-153 and a light chain having an amino acid sequence selected from the group consisting of SEQ ID NOs: 29-69 and 154-181.
9. The isolated protein of claim 3, wherein said binding protein is an antibody fusion protein.
10. The isolated protein of claim 1, wherein said protein is substantially purified.
11. An isolated DNA encoding a protein having an amino acid sequence comprising a sequence selected from the group consisting of SEQ ID NOs: 1-69 and 139-181.

12. The isolated DNA of claim 10, having a nucleotide sequence selected from the group consisting of SEQ ID NOs: 70-138 and 182-224.

13. The isolated DNA of claim 12, being substantially purified.

14. An isolated DNA encoding a protein obtained by generating a synthetic DNA library in a virus vector expressing said protein;

adding a magnetic label to cells expressing said antigen-bearing moiety; incubating virus expressing said protein with said magnetically labeled cells in the presence of an excess of non-labeled cells which do not express said antigen-bearing moiety to form a mixture, wherein said virus binds to said magnetically labeled cells;

isolating virus bound cells from said mixture and obtaining DNA encoding said protein therefrom.

15. The isolated DNA of claim 14, having a nucleotide sequence selected from the group consisting of SEQ ID NOs: 70-138 and 182-224.

16. A substantially pure protein obtained by generating a synthetic DNA library in a virus vector expressing said protein;

adding a magnetic label to cells expressing said antigen-bearing moiety; incubating virus expressing said protein with said magnetically labeled cells in the presence of an excess of non-labeled cells which do not express said antigen-bearing moiety to form a mixture, wherein said virus binds to said magnetically labeled cells;

isolating virus bound cells from said mixture and isolating said protein therefrom.

17. The substantially pure protein of claim 16, having an amino acid sequence selected from the group consisting of SEQ ID NOs: 1-69 and 139-181.

18. A substantially pure preparation of a protein obtained by expressing said protein from DNA encoding said protein, wherein said DNA is obtained by

generating a synthetic DNA library in a virus vector expressing said protein;

adding a magnetic label to cells expressing said antigen-bearing moiety;  
incubating virus expressing said protein with said magnetically labeled cells in the presence of an excess of non-labeled cells which do not express said antigen-bearing moiety to form a mixture, wherein said virus binds to said magnetically labeled cells;

isolating virus bound cells from said mixture and obtaining DNA encoding said protein therefrom.

19. The substantially pure protein of claim 18, having an amino acid sequence selected from the group consisting of SEQ ID NOs: 1-69 and 139-181.

20. A method of isolating a DNA encoding a multi-subunit protein which binds to an antigen-bearing moiety, said method comprising

generating a phage display library comprising a plurality of virus vectors, wherein a first of said virus vectors comprises a first heterologous DNA encoding a subunit of said protein and expresses said subunit on the surface thereof, and wherein a second of said virus vectors comprises a second heterologous DNA encoding a different subunit of said protein and expresses said different subunit on the surface thereof;

adding a magnetic label to cells bearing said antigen-bearing moiety on their surface;

incubating said phage display library with said magnetically labeled cells in the presence of an excess of non-labeled cells which do not express said antigen-bearing moiety to form a mixture, whereby said first and second virus vectors bind to said magnetically labeled cells;

isolating magnetically labeled cells from said mixture, whereby said first and second virus vectors are isolated from said mixture;

obtaining said first heterologous DNA from said first virus vector;

ligating at least the portion of said first heterologous DNA encoding said subunit and at least the portion of said second heterologous DNA encoding said different subunit to form a hybrid heterologous DNA;

generating a hybrid virus vector comprising said hybrid heterologous DNA and expressing said subunit and said different subunit of said protein on the surface thereof;

adding a magnetic label to cells bearing said antigen-bearing moiety on their surface;

incubating said hybrid virus vector with said magnetically labeled cells in the presence of an excess of non-labeled cells which do not express said antigen-bearing moiety to form a mixture, whereby said hybrid virus vector binds to said magnetically labeled cells;

isolating magnetically labeled cells from said mixture, whereby said hybrid virus vector is isolated from said mixture; and

obtaining DNA encoding said protein from said isolated virus vector, whereby said DNA is isolated.

21. A method of isolating a multi-subunit protein which binds to an antigen-bearing moiety, said method comprising

generating a phage display library comprising a plurality of virus vectors, wherein a first of said virus vectors comprises a first heterologous DNA encoding a subunit of said protein and expresses said subunit on the surface thereof, and wherein a second of said virus vectors comprises a second heterologous DNA encoding a different subunit of said protein and expresses said different subunit on the surface thereof;

adding a magnetic label to cells bearing said antigen-bearing moiety on their surface;

incubating said phage display library with said magnetically labeled cells in the presence of an excess of non-labeled cells which do not express said

antigen-bearing moiety to form a mixture, whereby said first and second virus vectors bind to said magnetically labeled cells;

isolating magnetically labeled cells from said mixture, whereby said first and second virus vectors are isolated from said mixture;

obtaining said first heterologous DNA from said first virus vector;

ligating at least the portion of said first heterologous DNA encoding said subunit and at least the portion of said second heterologous DNA encoding said different subunit to form a hybrid heterologous DNA;

generating a hybrid virus vector comprising said hybrid heterologous DNA and expressing said subunit and said different subunit of said protein on the surface thereof;

adding a magnetic label to cells bearing said antigen-bearing moiety on their surface;

incubating said hybrid virus vector with said magnetically labeled cells in the presence of an excess of non-labeled cells which do not express said antigen-bearing moiety to form a mixture, whereby said hybrid virus vector binds to said magnetically labeled cells;

isolating magnetically labeled cells from said mixture, whereby said hybrid virus vector is isolated from said mixture; and

isolating said protein from said isolated virus vector, whereby said protein is isolated.